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Publisher Taylor & Francis

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Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713618290>

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M. Ganesan^a; S. S. Krishnamurthy^a; M. Nethaji^a; K. Raghuraman^a

^a Department of Inorganic and Physical chemistry, Indian Institute of Science, Bangalore, India

To cite this Article Ganesan, M. , Krishnamurthy, S. S. , Nethaji, M. and Raghuraman, K.(1999) 'Transition Metal Chemistry of Diphosphazanes and Diphosphazane Monosulfides', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 355

To link to this Article: DOI: 10.1080/10426509908053657

URL: <http://dx.doi.org/10.1080/10426509908053657>

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Transition Metal Chemistry of Diphosphazanes and Diphosphazane Monosulfides

M. GANESAN, S.S. KRISHNAMURTHY, M. NETHAJI and
 K. RAGHURAMAN

*Department of Inorganic and Physical chemistry, Indian Institute of Science,
 Bangalore -560 012, INDIA.*

The reactions of chiral diphosphazanes, $\text{Ph}_2\text{PN}((S)\text{-*CHMePh})\text{PPhY}$ ($\text{Y}=\text{Ph}$, $\text{N}_2\text{C}_3\text{HMe}_2\text{-3,5}$) with $[\text{CpRu}(\text{PPh}_3)_2\text{Cl}]$ and those of the monosulfides, $\text{Ph}_2\text{PN}(\text{R})\text{P}(\text{S})\text{Ph}_2$ ($\text{R} = (S)\text{-*CHMePh}$ or CHMe_2) with $\text{Ru}_3(\text{CO})_{12}$, $[\text{RhCl}(\text{cod})]_2$ and $[\text{RhCl}(\text{CO})_2]_2$ have been investigated. Molybdenum-palladium heterometallic complexes of the diphosphazanes, $\text{MeN}\{\text{P}(\text{OR})_2\}_2$ ($\text{R} = \text{CH}_2\text{CF}_3$ or Ph) have been synthesised. Some unusual complexes have been obtained by the reductive carbonylation of cobalt and ruthenium halides in the presence of diphosphazanes, $\text{RN}\{\text{PX}_2\}_2$ ($\text{R} = \text{Me}$, $\text{X} = \text{OCH}_2\text{CF}_3$ or OPh ; $\text{R} = \text{CHMe}_2$, $\text{X} = \text{Ph}$). The structures of the products have been elucidated by NMR spectroscopy and in some cases confirmed by X-ray crystallography (e.g., 1-4).

